

JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

II. CLASSES AT THE UNIVERSITY OF WISCONSIN--MADISON

Q. Examples of Multidisciplinary Coursework

2. Assorted Minutes from Construction Education
Coordinating Committee Meetings (Fall, 1987)

August 11, 1987

TO: ✓ Jim Blakely
✓ Jim Graaskamp

FROM: Jim Hickman *JH*

SUBJECT: Notes on Meeting Devoted to Organizational Review
of the Program in Construction Administration,
August 10

1. Attendance. Dean Walsh, Chair, Dean Bollinger, Professor Calvin Cramer and Jim Hickman.
2. Purpose. The meeting was required by a memorandum from B. C. Cohen, July 3, written to the Deans of CALS, Engineering and Business requiring an Organization Review of the Program in Construction Management.
3. Facts
 - a. The current program is not accredited and major improvements will be needed to achieve accreditation. Under UW-System mandated program review, Construction Administration may be threatened.
 - b. Two sets of technical electives are offered in the program and 10% of the students elect the engineering emphasis and 90% of the students elect the business emphasis.
 - c. UW-Stout is rapidly expanding in construction administration.
 - d. Those managing the Construction Administration Program are satisfied with their relations with Business. Civil Engineering does not want to manage the program but has given lukewarm support. It is clear that the relationship with Civil Engineering is the main issue.
4. Position statements by Deans
 - a. School of Business supports the program. However, it is interested in limiting the program to building. Financing, including leasing, labor-management relations, social problems and urban planning are examples of topics that go beyond building and are best taught in the School of Business. It is necessary to define sharply the limits of the program.

Jim Blakely
Jim Graaskamp
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- b. The College of Engineering supports the program. The Department of Civil Engineering has little interest in construction. The College is attempting to recruit faculty in construction which should strengthen Civil Engineering and Construction Administration.
- c. CALS feels it necessary to improve the quality of the program. It generates many students and their placement is good.

5. Summary and next steps

- a. It is clear that Civil Engineering is the key. For Construction Administration to succeed it needs support from Civil Engineering. It has not gotten this support in recent years. The School of Business plays only a tangential role in this.
- b. Dean Walsh will appoint a working group composed primarily of faculty from Civil Engineering and Construction Administration to explore cooperation between CALS and Engineering on this subject. Jim Blakely would probably be appointed as a School of Business representative. My guess is that he can be an observer. Our interests do not seem central to the current discussions.

rg




University of Wisconsin-Madison

Office of Dean and Director
140 Agriculture Hall
1450 Linden Drive
Madison, Wisconsin 53706
608-262-1251

College of Agricultural and Life Sciences

October 16, 1987

TO: Gary Bubenzer
Cal Cramer
Norbert Lovata
Jim Blakely
Jim Graaskamp ✓
Al Wortley
Ray Matulionis
Alain Peyrot
C. K. Wang

FROM: Dean John Bollinger 
Dean James Hickman 
Dean Leo Walsh 

RE: Establishment of a Construction Education Coordinating Committee

Because of the need within the construction industry for people trained in both administration and engineering, several Departments, Schools and Colleges within the Madison campus are placing increased emphasis on construction education. It is important that this growth be well coordinated so that program goals are clearly defined and are complimentary rather than duplicative.

We are asking you to serve as a committee to help coordinate the growth and enhance the quality of the construction education programs on campus. Specifically we ask you to address the following issues:

1. Develop a plan for undergraduate education that will ensure the rapid accreditation of (a) a Construction Administration program in Agricultural Engineering and, (b) a Construction Engineering option within Civil Engineering.
2. Develop a structure which will encourage interdisciplinary research and graduate education. Adapting an administrative structure such as that used in the Land Resources program or in the Land Information Studies program may be appropriate for the Construction program as well.
3. Develop a plan to encourage coordination between Graduate/Research programs and Continuing Education programs.

Questions related to the appropriate designation of the Agricultural Engineering/Construction Administration program will not be addressed by this committee. After program coordination and accreditation is achieved we will consider whether it would be advisable to change the title or the administrative structure of the Construction Administration program.

We appreciate your willingness to serve as a member of this team. Gary Bubenzer will serve as chairman and convene the group in the near future. We would appreciate copies of the minutes of all meetings so that we will be informed of your progress, and we request a final report by December 4, 1987.

xc--B. Cohen
P. Certain

INFORMAL MINUTES

CONSTRUCTION EDUCATION COORDINATING COMMITTEE November 5, 1987

Present: Jim Blakely, Neil Eldin, Alain Peyrot, Jim Graaskamp,
C. K. Wang, Norbert Lovata, Gary Bubenzer

Absent: Al Wortley, Ray Matulionis

After introductions and background comments concerning construction education on campus, the committee reviewed the charge received from the Deans. A framework was established for establishing recommendations for the first two charges.

In order to establish complementary undergraduate programs in Construction Administration and Construction Engineering the uniqueness of each program must be clearly established. A framework for establishing areas of uniqueness and commonality was established (Figure 1). Wang and Peyrot will develop the engineering portion of the figure and Eldin and Lovata will develop the Administration portion. The results will be presented at the next meeting. In addition courses should be identified as 1. Courses required of both programs, 2. Courses required of one program but not the other, 3. Courses acceptable to both programs as technical electives, and 4. Courses not transferable between programs. Copies of ABET and ACCE accreditation requirements will be distributed to each committee member.

Alternatives for developing coordinated Graduate Education/Research programs were briefly discussed (figure 2). Graaskamp presented the structure for a new informal program in Facilities Management that could serve as a model for an initial effort in the graduate education area. A more formal structure such as that used by the programs in the Institute for Environmental Studies was also discussed. The two approaches may represent a natural sequence in developing a strong, visible program in graduate education and research in the construction area.

The next meeting will be WEDNESDAY, NOVEMBER 18 at 1:30 in 104 of the Commerce Building.

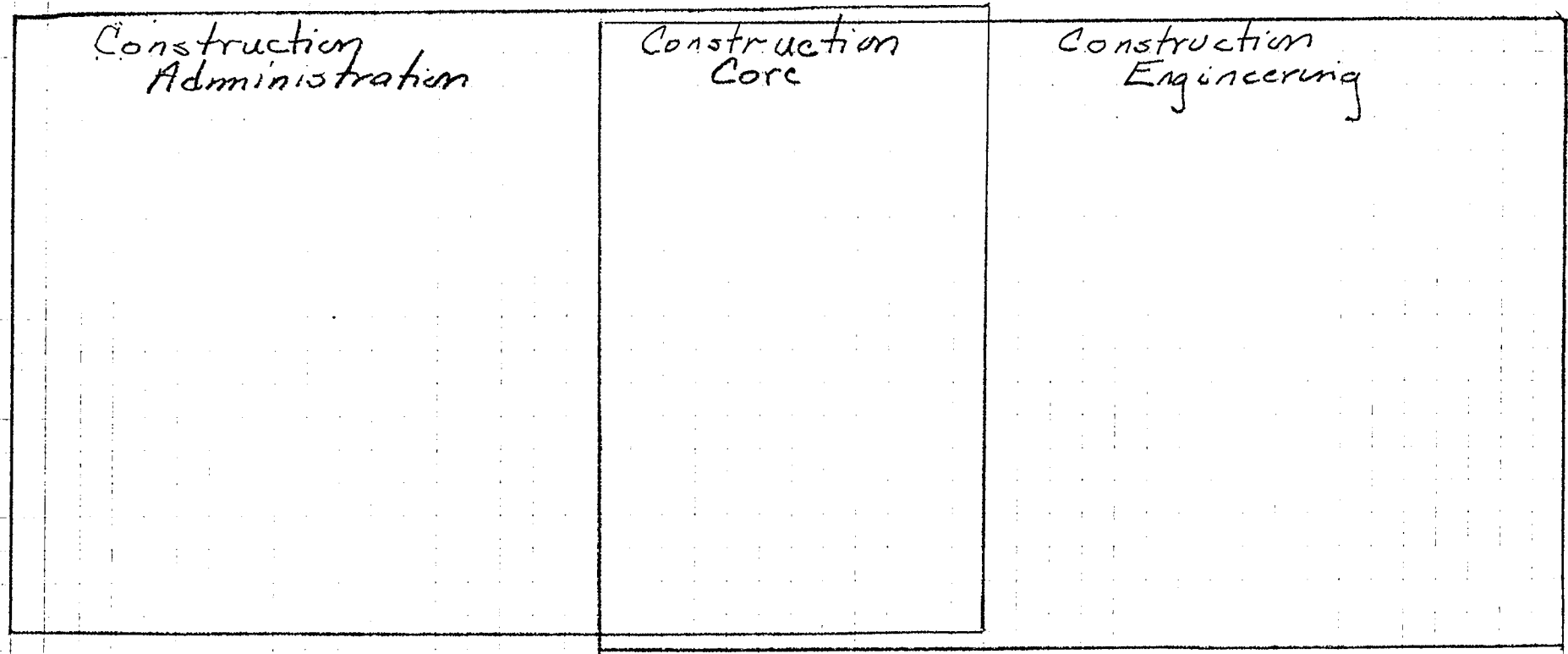
ASSIGNMENTS:

Undergraduate Education Programs - Wang, Peyrot, Eldin, Lovata
Graduate Research Structure - All
Distribute ACCE and ABET Requirements - Bubenzer

Distribution:

All Committee Members
Deans Bollinger, Walsh, Hickman

ACCE Construction Administration Construction Engineering ABET



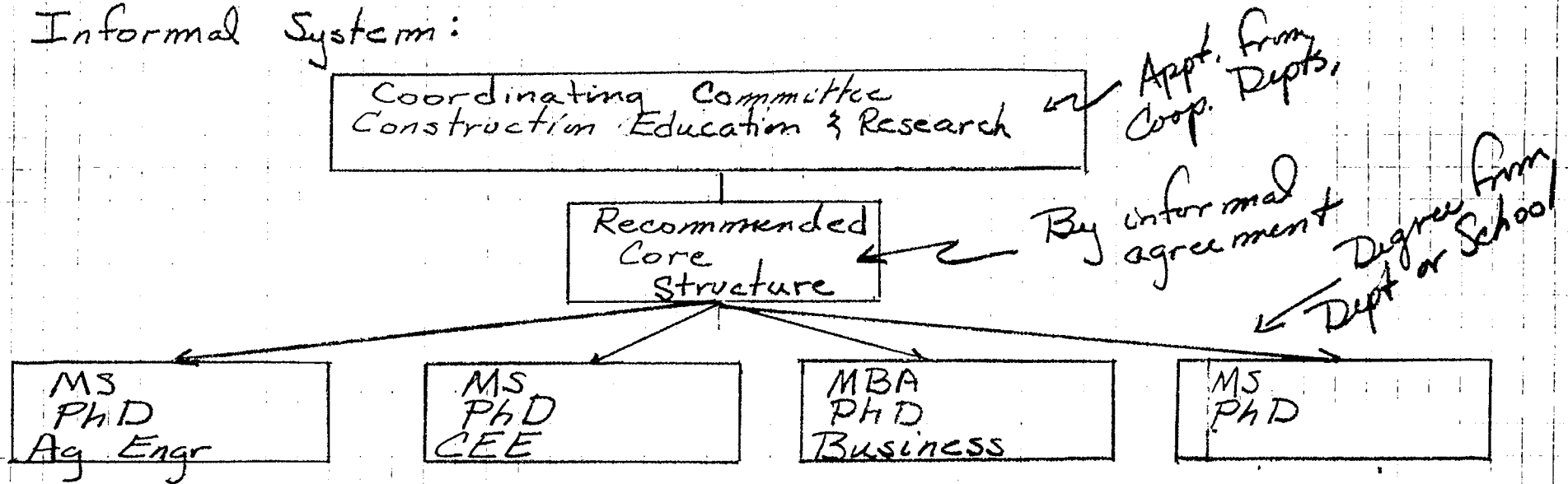
Goals:
Unique

Common

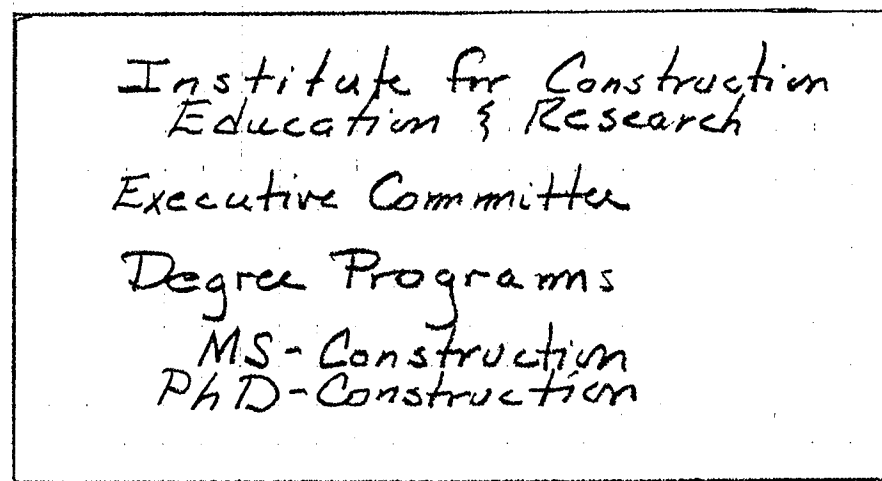
Unique

Figure 1:

Informal System:



Formal System



Require
formal
establishment
of
Institute/Center
and
Degrees

Figure 2

INFORMAL MINUTES
CONSTRUCTION EDUCATION COORDINATING COMMITTEE
November 18, 1987

Attendees : Jim Blakely, Neil Eldin, Alain Peyrot, Jim Grasskamp,
C. K. Wang, Norbert Lovata, Ray Matulionis, and Gary
Bubenzer.

The meeting started by reviewing the minutes of November 5, 1987 meeting. A summary of the criteria for the ACCE and ABET accreditation curriculum (copy attached) prepared by G. Bubenzer was distributed to all attendees to facilitate identifying the requirements of both accreditation boards.

The Civil Engineering Department presented a list of the courses required for the sought Construction Option, and the Agricultural Engineering Department presented a list of the courses required for the Construction Administration program. A review of both lists showed apparent similarity of several courses required by both departments. Courses identified as potentially similar included:

1. Construction Plans & Specifications
2. Construction Planning & Scheduling
3. Automation of Project Controls
4. Legal Issues in Construction
5. Construction Estimating
6. Cost Control
7. Construction Safety

The committee's chairman recommended that the representatives of both departments should prepare outlines for the above courses showing the contents of each course. A comparison of the contents prepared by the two departments will allow an objective assessment for cross-listing and sharing of teaching responsibilities in these areas.

The next meeting is scheduled for November 24, 1987 at 1:30 in room 104 - Commerce Building.

Distribution - All committee members.
Deans Bollinger, Walsh, Hichman

CRITERIA FOR ACCREDITATION
Curriculum

ACCE	ABET
General Education 18 Semester Credits	Humanities and Social Sciences 1/2 yr 16 Semester Credits
Mathematics and Science 18 Semester Credits Beyond Algebra & Trig	Mathematics and Basic Sciences 1 yr 32 Semester Credits Beyond Algebra & Trig
Construction Sciences 24 Semester Credits	Engineering Sciences 1 year 32 Semester Credits
Construction 24 Semester Credits	Engineering Design 1/2 year 16 Semester Credits
Business and Management 24 Semester Credits	Business Management (Required of Construction Engineering Programs, not all ABET Engineering) 1/2 year 16 credits
Other 12 Semester Credits	Non-designated 1/2 year 16 credits

INFORMAL MINUTES
CONSTRUCTION EDUCATION COORDINATING COMMITTEE
November 24, 1987

Attendees: Neil Eldin, Alain Peyrot, Jim Grasskamp,
Norbert Lovata, and Ray Matulionis

The Agricultural Engineering Department distributed a copy of the contents of the courses which appeared similar in the two construction programs (copy attached). A list of these courses is provided in the minutes of the previous meeting dated November 18, 1987. The course contents were discussed in detail. Course contents for Construction Administration and the Construction Engineering option of CEE appear to be very similar in these areas. Construction Administration faculty expressed their willingness to accomodate the requirements of the Construction Engineering option in the new courses

Grasskamp recommended the addition of the topic of "liability of third party" to the contents of the "Construction Safety" course. He also suggested that the sequence of these courses should allow a Masters' student in a related program to benefit from these courses without having to extend the minimum time for this degree. In order to do so, he suggested the consideration of offering some of these courses in summer semesters and the use of 500 and 600 numbering series for the courses classified as advanced level.

A motion to recommend cross-listing these courses between Ag Engr and CEE was made and seconded. The motion was passed unanimously. The cross-listing of these courses will prevent duplication of efforts in the two departments, will facilitate the sharing of teaching responsibilities, will help the two departments in the accreditation process, and will provide more flexibility for other programs related to facility management across the campus.

The next meeting is scheduled for December 2, 1987 at 1:30 in room 104 - Commerce Building.

Distribution - All committee members,
Deans Bollinger, Walsh, Hichman

COURSE OUTLINE

CAL.	WEEK	CLASS LECTURES AND TOPICS
	1	intro. to estimating practices & methods basic quantity. units, volumes & calculations
	2	introduce labor requirements and equipment
	3	specific quantity take off units (examples) dirt, concrete, masonry
	4	INTRODUCE FIRST CONSTRUCTION PROJECT begin basic quantity take off from project
	5	cont. specific quantity take off EXAMINATION # 1
	6	Introduce scheduling activity list & CPM
	7	interface quantities with labor & scheduling
	8	complete first project and present results
	9	START MAIN COMMERCIAL CONSTRUCTION PROJECT
	10	introduce PDM activities EXAMINATION # 2
	11	cover specialty items & materials management
	12	integrate construction equipment & crew size into project estimating concepts
	13	introduce elec. & mech. construct. summaries
	14	review main project summaries & quantities
	15	introduce punch list requirements
	16	present complete estimates to class
	17	local contractors pre-bid review FINAL EXAMINATION

COMPUTER APPLICATIONS IN PROJECT MANAGEMENT - AgrEng#375
Course Outline

<u>Week No.</u>	<u>Topics Covered in the Period</u>
1	- Project Phases - Types of Contracts
2	- Bidding Cycle and Strategies - Review of MTOs
3	- Use of Lotus (MTOs & Pricing)
4	- Use of WESSEX (Computer Generated Bid)
5	- Compilation and Submission of Formal Bids
6	- Bid Evaluation and Awards Cycles
.....	
7	- Review of Scheduling Techniques
8	- Use of PV/P3 Systems
9	- Use of PMS80 Systems
.....	
10	- Review of Cost Control Principles
11	- Use of TCM system
12	- Cost/Scheduling Integration Techniques
13	- Use of GEROCPM System
14	- Computer Generated Management Reports
.....	

TEXT : Class Handouts will be provided to cover selected topics
REFERENCES : Systems Manuals will be available on reserve

CONSTRUCTION PLANS AND SPECIFICATIONS - AgrEng#375
Course Outline

<u>Week No.</u>	<u>Topics Covered in the Period</u>
1	<ul style="list-style-type: none">- The Need for Standardization- Organization of Drawings and Specifications
2	<ul style="list-style-type: none">- Elements of legal agreements and Contracts- Project Manuals - CSI Example
3	<ul style="list-style-type: none">- Bidding Requirements and Documents- Surety, Insurance, and Bonds
4	<ul style="list-style-type: none">- Changes to Bidding Documents- Changes to Contract Documents
5	<ul style="list-style-type: none">- Reading Construction Drawings- Coordination of Plans and Specifications
6	<ul style="list-style-type: none">- Specification Writing Techniques- Specification Language
7	<ul style="list-style-type: none">- Descriptive, Performance, Reference, Proprietary, and nonrestrictive Specifications
8	<ul style="list-style-type: none">- CSI Divisions and Format- General Conditions
9	<ul style="list-style-type: none">- Supplemental Conditions- Division 1: General Requirements
10	<ul style="list-style-type: none">- Master Specifications (AIA, CSI, USCE)- Use of Electronic Media
11	<ul style="list-style-type: none">- Specification Production Techniques
12	<ul style="list-style-type: none">- Producing a Project Manual: Small / Large Offices
13	<ul style="list-style-type: none">- Special Issues: Allowances, Unit Prices, Procurement, Performance, Alternates
14	<ul style="list-style-type: none">- Examination of Actual Documents- Panel Discussion with CSI Officers and Guest Speakers from the Industry

TEXT : Manual of Practice, CSI Publication, Alexandria, VA 22314
REFERENCES : Construction Specifications, J. R. Lewis, New Jersey:
Prentice-Hall, Inc.
Construction Specification Writing, H. J. Rosen, New
York: John Wiley & Sons.

COURSE OUTLINE

CAL. WEEK	CLASS LECTURES AND TOPICS
1	introduction to network concepts
2	development of networks, logic & rules
3	time estimates & schedules
4.	mathematical scheduling concepts
5.	introduction to project cost controls
	EXAM. # 1
6.	field and practical applications
7	project parameters & constraints
8	time costing & critical analysis
9	statistical technique analysis
10	computer applications for scheduling
	EXAM # 2
11	computer scheduling systems
12	computer plannings systems
13	interfacing plan.-sched. & field situations
14	decision analysis for scheduling
15	FINAL EXAM
15	planning, scheduling & leadership decisions

COURSE OUTLINE

Course Topics:

1. What is Safety?
- definitions, etc.
2. Beliefs as to Why Accidents Occur
3. Economic Impact of Accidents
4. Worker's Compensation
5. OSHA Act
6. Standard and Codes
7. Human Factors - Safety Attitudes
8. Management's responsibility for safety
9. Personnel's responsibility for safety
10. Hazards and their control
11. Developing a plant safety program
12. First-aid
13. Accident investigation
14. Mechanical injuries and their prevention
15. Heat and temperature
16. Noise and vibration
17. Eye safety
18. Electrical hazards
19. Fire
20. Safety analyses

UNIVERSITY OF WISCONSIN—MADISON

DEPARTMENT OF
AGRICULTURAL ENGINEERING
CONSTRUCTION ADMINISTRATION PROGRAM

460 Henry Mall
Madison, Wisconsin 53706
608-262-3310



December 2, 1987

TO: CONSTRUCTION EDUCATION COORDINATING COMMITTEE

FROM: AGRICULTURAL ENGINEERING UNDERGRADUATE CURRICULUM
COMMITTEE

RE: Review and recommendation of construction courses

The undergraduate curriculum committee of the Department of Agricultural Engineering has reviewed the five following proposed course outlines as submitted to the special committee for coordinating construction education.

1. Construction Plans and Specifications
2. Construction Cost Estimating
3. Computer Applications in Project Management
4. Construction Safety
5. Construction Planning and Scheduling

It is the recommendation of this committee to:

1. Submit these courses for approval to the Civil and Ag Engineering Departments.
2. Cross list these courses between the two departments involved.
3. Number the appropriate courses which fit into the existing schedule with current courses offered by Civil Engineering. Designate those courses which will be graduate level courses.

These courses will be brought before the Agricultural Engineering faculty for consideration at the December 1987 faculty meeting. The recommendation of this committee will be for approval of the construction courses.

cc
Bubenzer
Barrington
Cramer
Lovata
Straub